

PATENT  
Docket No. 53473US002  
(formerly 53473USA1A)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Clinton P. Waller, J. et al. ) Group Art Unit: 1774  
Serial No.: 08/892,902 )  
Confirmation No.: 7374 ) Examiner: M. Yamnitzsky  
Filed: 14 July 1997 )

For: MICROPOROUS INKJET RECEPTORS CONTAINING BOTH A PIGMENT  
MANAGEMENT SYSTEM AND A FLUID MANAGEMENT SYSTEM

DECLARATION OF CLINTON P. WALLER, JR.

Assistant Commissioner for Patents  
Washington D.C. 20231

Sir:

I. Clinton P. Waller, Jr., declare and say as follows:

1. I am a co-inventor of the subject matter claimed in the above-identified  
U.S. Patent Application Serial No. 08/892,902, filed July 14, 1997.

2. I hereby make the following Declaration in support of the patentability of  
the claims.

3. I produced the example images included herewith which demonstrate the  
visual difference between an image printed on a microporous membrane having a pore size less  
than 0.2 $\mu$ m and an image printed on a microporous membrane having a pore size of at least  
0.2 $\mu$ m. All example images were imaged in the same manner using the same printer, pigment-  
based ink, and print mode. The example images were imaged on the same type of coated  
substrate, with the only difference between the substrates being the pore sizes. Each example  
was imaged on a Thermally Induced Phase Separated microporous membrane as disclosed in  
U.S. Patent Nos. 4,539,256 (Shipman et al.), 4,726,989 (Mrozinski), and 5,120,594 (Mrozinski),  
the disclosures of which are incorporated into the above-captioned patent application. The

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examples were imaged using a Hewlett Packard 2500 CP color printer set on uv custom vinyl mode (print mode), at 600 dpi and approximately 30 pl drop size. Pore sizes indicated were a bubble point pore size measured according to ASTM F-316.

4. Exhibit A was imaged using pigmented ink on a substrate having a pore size of  $0.17\mu\text{m}$  and including a pigment management system and fluid management system composition that included a solution of 3% by weight (wt-%)  $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$ , 4 wt-% Dioctylsulfosuccinate-Na-salt (DOS), 3 wt-% polyvinylpyrrolidinone (PVP) - acrylic acid (AA) copolymer in a ratio of about 75% by weight PVP to about 25 % by weight AA, 30 wt-% isopropyl alcohol, and 60 wt-% water. The composition including a pigment management system and fluid management system was applied to the membrane substrate flooding the substrate with the solution then wiping the substrate with a glass rod. The substrate was then dried with a hot air gun prior to printing the image. An image using the pigment-based inks was then produced on the substrate. The image was not subjected to a water wash. The image was of poor quality, showing significant bleeding of color.

5. Exhibit B was imaged using the same pigmented inks as was used for Exhibit A on a substrate having a pore size of  $0.4\mu\text{m}$  and including the same composition including a pigment management system and fluid management system, including solution of 3% by weight (wt-%)  $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$ , 4 wt-% Dioctylsulfosuccinate-Na-salt (DOS), 3 wt-% polyvinylpyrrolidinone (PVP) - acrylic acid (AA) copolymer in a ratio of about 75% by weight PVP to about 25 % by weight AA, 30 wt-% isopropyl alcohol, and 60 wt-% water, as was used in Exhibit A. The composition was applied to the substrate of Exhibit B in the same manner as in Exhibit A. An image using the pigment-based inks was then produced on the substrate of Exhibit B in the same manner as in Exhibit A. Exhibit B was subjected to a water wash by holding the image under running water for 15-20 seconds, without wiping the image. The image of Exhibit B was of clearly improved quality over the image of Exhibit A, with improved

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contrast and image detail and little or no color bleeding, even in view of the fact that the image of Exhibit B (substrate having a 0.4 $\mu$ m pore size) was subjected to a water wash and the image of Exhibit A (substrate having a 0.17 $\mu$ m pore size) was not subjected to a water wash.

6. Comparing Exhibits A and B, it is apparent that images printed with the same pigmented inks under the same conditions and on the same type of substrate including a composition that includes a pigment management system and fluid management system as indicated in Exhibits A and B, with the only difference being the pore sizes of the substrates, may produce different quality images. Although the compositions including a pigment management system and a fluid management system included a PVP-AA copolymer, it is believed that the difference in image quality is a result of the pore size.

7. I further declare that statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Clinton P. Waller, Jr.

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Date



EXHIBIT  
A

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Received from < 6123051228 > at 12/24/02 3:47:45 PM [Eastern Standard Time]



EXHIBIT  
B

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